

Executive Summary

ES1.1 Introduction

The following sections summarize the Final Environmental Impact Statement (EIS) for the Bald Mountain Mine (BMM) North and South Operations Area Projects (project). This information is provided as a synopsis for the public, but it is not a substitute for the review of the complete Final EIS. The document is structured into seven chapters and one appendix section containing ten appendices. The document structure is as follows: Chapter 1.0 provides an introduction to the project; Chapter 2.0 describes the Proposed Action and Alternatives, provides information on Cumulative Effects Study Areas (CESA) by resource, and discusses the past and present actions and reasonably foreseeable future actions occurring within the cumulative effects study area for each resource; Chapter 3.0 discusses the affected environment, identifies each resource examined in the Final EIS, discloses the environmental consequences and the potential impacts to each resource, and the cumulative effects that would occur with each of the alternatives when combined with the past and present actions and reasonably foreseeable future actions discussed in Chapter 2.0; Chapter 4.0 discusses the consultation and coordination that was conducted during the EIS process, including a description of the scoping and Draft EIS comment process; Chapter 5.0 provides a list of preparers and reviewers of the Final EIS; Chapter 6.0 lists the references that were used in the Final EIS to document the source or sources of information; Chapter 7.0 includes a glossary of terms the readers can use to obtain definitions for scientific or technical terms in addition to an index of other common terms throughout the Final EIS; the appendices are the last section of the Final EIS.

Barrick Gold U.S. Inc. (Barrick) is proposing to expand existing and construct and operate new mine facilities at its BMM North and South Operations Area projects. The project is located in the Bald Mountain Mining District in White Pine County, Nevada, approximately 65 miles northwest of Ely and 25 miles northeast of Eureka. The proposed North Operations Area (NOA) project would expand and combine the current BMM NOA Plan of Operation (PoO) (NVN-82888) and Casino/Winrock PoO (NVN-068251) into one PoO. The proposed South Operations Area (SOA) project would expand and combine the existing Alligator Ridge Mine (NVN-068655) and the Yankee Mine (NVN-068259) into one PoO. The proposed consolidation of mine plans and boundary modifications would eliminate overlap between various plan boundaries and approved activities. To comply with Title 43 Code of Federal Regulations (CFR), subpart 3809 (43 CFR §3809), as amended, and State of Nevada regulations governing the reclamation of mined lands (Nevada Administrative Code 519A.010-635), Barrick submitted PoOs and Reclamation Permit Applications for the North and South Operations Area projects to the Bureau of Land Management (BLM) and Nevada Division of Environmental Protection (NDEP) in October 2011.

Barrick completed the sale of the BMM to Kinross Gold Corporation (Kinross) in January 2016 prior to completion of the EIS process. Kinross has assumed ownership of the BMM and the proposed project. The Final EIS has retained the name of Barrick in the document, but Kinross is the new operator of the BMM and proponent of the project.

ES1.2 Proposed Action

ES1.2.1 North Operations Area

Under the Proposed Action, Barrick would combine and expand the existing BMM NOA PoO boundary and the existing Casino/Winrock Mine PoO boundary into a unified PoO boundary called the proposed NOA project. The proposed NOA project includes development and/or expansion of mining and exploration activities within the area currently permitted as the existing BMM NOA and Casino/Winrock PoO, which includes the BMM, Mooney Basin Operations Area, Little Bald Mountain (LBM) Mine, Casino

Mine, and Winrock Mine. Under the Proposed Action, existing/authorized facilities, including active open pits; rock disposal areas (RDAs); heap leach facilities (HLFs); ore process areas; interpit areas; access and haul roads; growth media stockpiles (GMS); and ancillary and support facilities, would be expanded and developed within the proposed NOA project. The Proposed Action for the NOA project also includes the expansion of mining and exploration activities within the reclaimed White Pine Mine.

Proposed activities within the proposed NOA project would include:

- Modification of six existing open pits and development of five new open pits;
- Modification of 13 existing RDAs and development of 7 new RDAs;
- Modification of three existing HLFs and one associated process facility, and development of two new HLFs and four associated process facilities;
- Modification of existing support facilities and development of new support facilities;
- Removal of previously authorized underground operations in the Top Pit Complex (an administrative action);
- Modification of the Regional Exploration PoO (NVN-078825) boundary to remove overlap with the proposed NOA project boundary;
- Continuation of exploration drilling activities within the proposed NOA project boundary; and
- Construction of four transmission lines ranging in capacity from 24.9 kilovolts (kV) to 69 kV to provide power at the Redbird Pit, Top Pit, LBM Pit, Winrock process area, South Poker Flats process area, and the LBM communication site.

The proposed NOA project would increase the total approved surface disturbance from 9,381 acres to 13,739 acres, for a net increase of 4,357 acres. The proposed NOA PoO area would increase to encompass 30,843 acres of BLM-administered land and 242 acres of private land.

ES1.2.2 South Operation Area

Under the Proposed Action, the existing Alligator Ridge Mine and Yankee Mine PoO boundaries would be expanded and combined into a unified PoO boundary called the SOA project. The proposed SOA project would include the development and/or expansion of mining activities within the areas currently permitted as the existing Alligator Ridge Mine and Yankee Mine. Under the Proposed Action, existing/authorized facilities including open pits; RDAs; HLFs; ore process areas; interpit areas; access and haul roads; GMS; and ancillary and support facilities would be expanded and developed within the proposed SOA project.

Proposed activities within the proposed SOA project would include:

- Modification of three existing open pits and development of one new open pit;
- Modification of four existing RDAs and development of three new RDAs;
- Modification of two existing HLFs and development of one new HLF and associated process facilities;
- Improvement to existing roads and reroute public access;
- Development of new support facilities;
- Modification of the Regional Exploration PoO boundary to remove overlap with the proposed SOA project boundary;
- Implementation of exploration drilling activities within the proposed SOA project boundary;

- Construction of two new transmission lines ranging from 24.9 kV to 69 kV to provide power at the Vantage Pit and Gator process area;
- Extension of an existing 69-kV power line to provide power at the Yankee process area;
- Construction of new substations at the Vantage Pit and Yankee process area;
- Development of upgrades to the existing Vantage Substation;
- Development of a Transportation Utility Corridor (TUC) to connect the proposed SOA and NOA projects by improving an existing road to haul road specifications; and
- Construction of a new landfill located at the Vantage and Yankee South RDA disturbance areas.

The proposed SOA project would increase the total surface disturbance from 944 acres to 3,684 acres, for a net increase of 2,740 acres. The SOA PoO would total 10,865 acres, all of which occur on BLM-administered lands. The combined SOA and NOA projects total surface disturbance would be 7,097 acres.

ES1.3 North and South Operations Area Facilities Reconfiguration Alternative

The North and South Operations Area Facilities Reconfiguration Alternative (Reconfiguration Alternative) was developed to address potential impacts to mule deer migration; greater sage-grouse leks and associated habitats; visual impacts affecting the cultural setting of the Pony Express National Historic Trail, Ruby Valley Pony Express Station, Ruby Lake Marsh National Natural Landmark, and Fort Ruby National Historic Landmark; and visual impacts affecting visitor aesthetics at the Ruby Lake National Wildlife Refuge (NWR). As shown in **Table ES-1**, the total proposed disturbance under the Reconfiguration Alternative would be 5,668 acres, a reduction of 1,429 acres of new disturbance from the Proposed Action. With consideration of previously authorized surface disturbance that would be withdrawn from the Proposed Action (11 acres) and the Reconfiguration Alternative (1,934 acres), development of the Reconfiguration Alternative would represent a 3,352-acre (47 percent) reduction in surface disturbance in comparison to the Proposed Action. The Reconfiguration Alternative also would reduce the life of mine from 20 years to 10 years in comparison to the Proposed Action.

Table ES-1 Reconfiguration Alternative – Surface Disturbance Comparison

Project Component	Proposed Action Surface Disturbance (acres) ^{1,2}		Reconfiguration Alternative Surface Disturbance (acres) ¹		Difference (acres/percent) ¹
	Proposed Surface Disturbance	Withdrawn Authorized Disturbance ⁵	Proposed Surface Disturbance	Withdrawn Authorized Disturbance ⁵	
Open Pits	1,210	0	885	-163	-488 / -40
Rock Disposal Areas	2,787	0	2,550	-1,325	-1,562 / -56
Heap Leach Facilities ³	1,156	0	678	0	-478 / -41
Support Facilities ⁴	1,855	-11	1,465	-447	-826 / -45
Exploration	90	0	90	0	0
Total	7,097	-11	5,668	-1,934	-3,352 / -47

¹ Acreage values were determined from geographic information system (GIS) data that combined the NOA and SOA project components. Acreage values may vary due to rounding.

² Refer to **Table 2.4-1** for detailed acreages by project component.

³ Heap leach facilities include heap leach facilities, tailing impoundments, and process areas.

⁴ Support facilities include haul roads, interpit areas, secondary/exploration roads and pads, well access roads, maintenance/administrative facilities, silt pits, interpit, GMSs, monitoring wells, communication sites, transmission line corridors, and other ancillary disturbances. Support facility acreage includes 12 acres of facilities for which locations are not yet known. These acreages are not included in the GIS.

⁵ Acreage values refer to the portions of surface disturbance that is already authorized under previous NEPA documents that would not be developed under the alternative.

Source: SRK 2015, 2014a, 2012a.

ES1.4 North and South Area Operations Western Redbird Modification Alternative

The North and South Operations Area Western Redbird Modification (WRM) Alternative was developed to further address potential impacts to mule deer migration through the NOA. Barrick proposed the modifications to the Numbers and Redbird area facilities during the preparation of the Draft EIS to address impacts to mule deer migrating through the western side of the NOA project.

The WRM Alternative would eliminate 1,831 acres of disturbance from the Proposed Action and an additional 2,169 acres of previously authorized disturbance would not be constructed, representing a 3,989-acre (56 percent) reduction in comparison to the Proposed Action as shown in **Table ES-2**. The total proposed disturbance under the WRM Alternative would be 5,266 acres. The WRM Alternative also would reduce the life of mine from 20 years to 10 years in comparison to the Proposed Action.

Table ES-2 WRM Alternative – Surface Disturbance Comparison

Project Component	Proposed Action Surface Disturbance (acres) ^{1,2}		WRM Alternative Disturbance (acres) ¹		Difference (acres/percent) ¹
	Proposed Surface Disturbance	Withdrawn Authorized Disturbance ⁵	Proposed Surface Disturbance	Withdrawn Authorized Disturbance ⁵	
Open Pits	1,210	0	780	-224	-654 / -54
Rock Disposal Areas	2,787	0	2,345	-1,461	-1,903 / -68
Heap Leach Facilities ³	1,156	0	678	0	-478 / -41
Support Facilities ⁴	1855	-11	1,373	-484	-955 / -51
Exploration	90	0	90	0	0 / 0
Total	7,097	-11	5,266	-2,169	-3,989 / -56

¹ Acreage values were determined from geographic information system (GIS) data that combined the NOA and SOA project components. Acreage values may vary due to rounding.

² Refer to **Table 2.4-1** for detailed acreages by project component.

³ Heap leach facilities include heap leach facilities, tailing impoundments, and process areas.

⁴ Support facilities include haul roads, interpit areas, secondary/exploration roads and pads, well access roads, maintenance/administrative facilities, silt pits, interpit, GMSs, monitoring wells, communication sites, transmission line corridors, and other ancillary disturbances. Support facility acreage includes 12 acres of facilities for which locations are not yet known. These acreages are not included in the GIS.

⁵ Acreage values refer to the portions of surface disturbance that is already authorized under previous NEPA documents that would not be developed under the alternative.

Source: SRK 2015.

Table ES-3 provides a summary of the acreage differences between proposed facility footprints within the North and South Operations Area projects under the Reconfiguration Alternative and the WRM Alternative.

Table ES-3 WRM Alternative Surface Disturbance Comparison with the Reconfiguration Alternative, North and South Operations Areas

Project Component	Reconfiguration Alternative Surface Disturbance (acres) ¹		WRM Alternative Surface Disturbance (acres) ¹		Difference (acres/percent) ¹
	Proposed Surface Disturbance	Withdrawn Authorized Disturbance ⁴	Proposed Surface Disturbance	Withdrawn Authorized Disturbance ⁴	
Open Pits	885	-163	780	-224	-166 / -19
Rock Disposal Areas	2,550	-1,325	2,345	-1,461	-341 / -13
Heap Leach ²	678	0	678	0	0 / 0
Support Facilities ³	1,465	-447	1,373	-484	-130 / -9
Exploration	90	0	90	0	0 / 0
Total	5,668	-1,934	5,266	-2,169	-636/ -11

¹ Acreage values were determined from GIS data that combined the NOA and SOA project components. Acreage values may vary due to rounding.

² Heap leach facilities include heap leach facilities, tailing impoundments, and process areas.

³ Support facilities include haul roads, interpit areas, well access roads, maintenance/administrative facilities, silt pits, interpit, GMSs, monitoring wells, communication sites, transmission line corridors, and other ancillary disturbances. Support facility acreage includes 8 acres of facilities for which locations are not yet known. These acreages are not included in the GIS.

⁴ Acreage values refer to the portions of surface disturbance that is already authorized under previous NEPA documents that would not be developed under the alternative.

ES1.5 No Action Alternative

Under the No Action Alternative activities associated with the Proposed Action would not occur and construction of all previously authorized expansion and associated facilities would continue. Barrick would continue its operations and closure and reclamation activities within the existing NOA and SOA boundaries under the terms and current permits and approvals as authorized by the BLM and State of Nevada. Exploration activities would continue in accordance with the Regional Exploration PoO and existing plan amendments. A detailed description of previously authorized actions within the existing BMM NOA PoO boundary is presented within the *Environmental Assessment for the Mooney Heap and Little Bald Mountain Mine Expansion Project* (BLM 2011a). Activities within the SOA would continue under previous authorizations for the Yankee and Alligator Ridge mines.

ES1.6 Agency Preferred Alternative

The BLM has identified the WRM Alternative as the Agency Preferred Alternative. The BLM selected this alternative because it meets the purpose and need while reducing surface disturbance and environmental impacts to water resources, mule deer, greater sage-grouse, and visual resources in comparison to the Proposed Action.

ES1.7 Introduction to Resource Impacts

Chapter 3.0 of this Final EIS discloses the affected environment and potential environmental consequences of the Proposed Action, Reconfiguration Alternative, WRM Alternative, and No Action Alternative. The following sections summarize the analyses of the Proposed Action, Reconfiguration Alternative, and WRM Alternative.

ES1.7.1 Geology and Minerals

Under the Proposed Action, geology and minerals would be directly affected by the extraction of 279 million tons of ore-bearing materials and the relocation of 1.16 billion tons of overburden/waste rock. Removal and processing of the ore from the geologic units would constitute a permanent loss or reduction in the mineral resource potential of the proposed NOA and SOA projects.

Under the Proposed Action, implementation of surface disturbance associated with open pits, RDAs, and HLFs would affect approximately 5,153 acres within the proposed NOA and SOA projects. Impacts to geology and mineral resources would include the potential loss of access to future mineral resources as a result of permanent placement of the proposed RDAs and HLFs. It is anticipated that these surface disturbances would have a minor effect on potential future access to remaining ore.

Open pit mining disturbances, and construction or expansion of the RDAs, and HLFs would permanently alter the natural topographic and geomorphic features. The open pits would not be reclaimed (the Redbird Pit, Top Pit Complex, and Yankee Pit would be partially backfilled) while the RDAs and HLFs would be reclaimed but still alter the topography and geomorphology of the study area. Temporary facilities such as haul roads, GMS, process facilities, and ancillary and support facilities would be reclaimed to the approximate pre-mining topography.

Mine pit slopes eventually become unstable over time due to erosion. Barrick would install pit berms around the perimeter of the open mine pits as part of the reclamation process to deter entry of wildlife and personnel. The RDAs and HLFs would be designed to be stable under the expected seismic conditions and would be monitored for stability.

The Reconfiguration Alternative would result in similar impacts to the Proposed Action with the following exceptions. A total of 33 million fewer tons of ore bearing materials and 124 million fewer tons of waste rock material would be extracted. The permanent alteration of topographic or geomorphic features associated with open pits and reclaimed RDAs and HLFs would be 4,113 acres under the Reconfiguration Alternative; approximately 1,040 acres less than the Proposed Action.

The WRM Alternative would result in 50 million fewer tons of ore and 334 million fewer tons of waste rock removed from the NOA as compared to the Reconfiguration Alternative. Under the WRM Alternative, mining at the Redbird Pit would be reduced from the estimated generation of 53 million tons of ore and 367 million tons of waste rock under the Reconfiguration Alternative to 3 million tons of ore and 33 million tons of waste rock under the WRM Alternative. Mining would extend to an elevation of 6,620 feet (amsl) in the Redbird Pit. This pit floor elevation is 600 feet higher than the proposed pit floor elevation (6,020 feet amsl) under the Reconfiguration Alternative. The shallower depth of mining at the Redbird Pit under the WRM Alternative would not intercept the pre-mining water table and partial pit backfill to prevent formation of a pit lake would not be required. The proposed surface disturbance associated with open pits, RDAs, and HLFs would decrease from 4,113 acres under the Reconfiguration Alternative) to 3,803 acres, an approximate 8 percent reduction as a result of reduced expansion of some open pits and RDAs in the western portion of the NOA.

ES1.7.2 Water Resources

Three springs occur within the 10-foot drawdown area located within the NOA under the Proposed Action: South Water Canyon, JBR No. 14 and Willow springs. The observed flow and associated wetlands suggest that South Water Canyon and JBR No. 14 springs are likely connected to the groundwater system that would potentially be affected by groundwater pumping. Willow Springs is controlled by shallow perched conditions that are not hydraulically interconnected with the groundwater system that would be affected by mine induced drawdown. The effects to the South Water Canyon and JBR No. 14 springs would depend on the actual drawdown that occurs in these areas and the site-specific hydraulic connection between the groundwater systems impacted by pumping and the perennial water source. Perennial water sources that are hydraulically connected to the groundwater system

impacted by pumping and within the drawdown area likely would experience a reduction in baseflow. Depending on the severity of these reductions in flow, this could result in drying up of springs and reducing the size of their associated wetland area. Impacts to other springs within the study area are not anticipated.

Potential impacts to these two springs also are anticipated to occur under the Reconfiguration Alternative. No impacts to springs within the study area are anticipated under the WRM Alternative.

Under the Proposed Action, there are three non-Barrick owned or controlled water rights located within the predicted mine induced 10-foot drawdown area resulting from the mine groundwater pumping activities. All three water rights are surface water rights established at a spring source and used for stock watering. Potential impacts could occur to two individual surface water rights and would depend on the site-specific hydrologic conditions that control surface water discharge. Only those waters sustained by discharge from the regional groundwater system would be likely to be impacted. For surface water rights that are dependent on groundwater discharge, a potential reduction in groundwater levels could reduce or eliminate the flow available at the point of diversion for the surface water right.

Potential impacts to water rights under the Reconfiguration Alternative would be the same as those described for the Proposed Action. No impacts to water rights are anticipated under the WRM Alternative.

Potential impacts to down gradient water quality due to backfilled pits are not anticipated based on the geochemical characterization of the proposed backfill material to be used in the Top Pit Complex and Redbird Pits under any action alternative.

Geochemical studies completed for development of the Waste Rock Management Plan conclude that the potential for acid drainage and metals mobilization is low under the Proposed Action, Reconfiguration Alternative, and WRM Alternative due to pervasive alkaline conditions, abundance of iron that increases the tendency for arsenic and antimony to sorb, and low rainfall within the study area.

ES1.7.3 Soils and Reclamation

The Proposed Action would disturb approximately 7,097 acres of soils within the proposed NOA and SOA combined. In addition to this disturbance, long-term soil compaction and rutting would result from the movement of heavy mining vehicles over haul roads and work areas.

Over time, soil impacts would be reduced by successful implementation of phased construction, concurrent reclamation of project facilities, and the successful restoration of productive post-mining land uses. These objectives would be attained through the use of Best Management Practices (BMPs), design features, applicant-committed environmental protection measures, and the use of site-adapted plant species for reseeded. Suitable soils and growth media would be salvaged, stockpiled, and seeded for an interim vegetation cover during mining construction and operations for use in future reclamation. Revegetation of disturbed areas would be conducted as soon as practical to reduce the potential for wind and water erosion, minimize impacts to soils and vegetation, help prevent the spread of invasive and non-native species in disturbance areas, and facilitate post-mining land uses. Concurrent reclamation would be conducted to the extent practical to accelerate revegetation of disturbed areas.

Impacts to soils from release of petroleum products during operations would be minimized with the implementation of Barrick's Spill Contingency Plan and Petroleum Contaminated Soil Management Plan.

It is likely that short- to long-term (e.g., up to 25 years or more) decreases in soil quality would not limit the attainment of overall post-mining land use objectives. Over time, soil quality on reclaimed and revegetated sites would resemble pre-mining conditions. Under the Proposed Action, a permanent irretrievable loss of soil productivity would occur on approximately 1,210 acres in association with development of the proposed open pits, which would not be reclaimed.

Soil impacts under the Reconfiguration Alternative would be the same as the Proposed Action with the following exceptions. Surface disturbance activities would disturb 3,352 fewer acres of soil in the proposed NOA and SOA combined. A permanent irreversible loss of soil productivity would occur on approximately 325 fewer acres than the Proposed Action, in association with development of the proposed open pits, which would not be reclaimed.

Soil impacts under the WRM Alternative would be similar to the Reconfiguration Alternative, except that implementation of this alternative would result in a further reduction of 636 acres of surface disturbance and the permanent irreversible loss of soil productivity would be reduced by an additional 105 acres.

ES1.7.4 Vegetation Resources

The Proposed Action would disturb approximately 7,097 acres of vegetation within the NOA and SOA, including approximately 3,051 acres of big sagebrush, 4,028 acres of pinyon-juniper woodland, 14 acres of mountain brush, and 6 acres of low sagebrush. With the exception of open pits, all project components would be reclaimed, representing a permanent loss of 1,210 acres of vegetation within the proposed NOA and SOA.

The majority of project-related surface disturbance would occur within woody-dominated vegetation types, representing a long-term impact as it could take up to 50 years following reseeding of recontoured facilities for mature shrub species to re-establish. Design features and applicant-committed environmental protection measures specific to vegetation focus on noxious weed prevention and control, reclamation, and minimization of surface disturbance. Applicant-committed environmental protection measures and BLM BMPs would be utilized to minimize impacts to vegetation. In addition, reclamation would be conducted as soon as practical, with concurrent reclamation implemented to the maximum extent possible. Successful reclamation standards would include the recontouring of all disturbed areas to blend with the natural topography, stabilization of erosion, and the establishment of an acceptable vegetative cover in accordance with Nevada Guidelines for Successful Revegetation prepared by NDEP, BLM, and the U.S. Forest Service.

Upon completion of operations, final closure and reclamation of proposed facilities would be completed pursuant to the final closure plan and schedule that would be submitted to the BLM and NDEP for approval. Reclamation activities would include ripping or scarifying growth media material, preparing the seed bed, seeding between the BLM recommended dates of October 1 and March 15 of each year, and applying two BLM-approved reclamation seed mixtures.

Satisfactory revegetation of disturbance areas is anticipated to occur approximately 3 to 15 years following reclamation but could require up to 50 years for sagebrush communities to fully reestablish. After 25 years, the reclaimed plant communities likely would consist of adequate herbaceous plant cover with sufficient diversity to substantially reduce the potential for soil erosion and provide suitable forage for livestock and wildlife. Reclamation of woody vegetation communities would take up to 50 years after initial reclamation activities.

Groundwater drawdown potentially may affect the South Water Canyon and JBR No. 14 springs under the Proposed Action and Reconfiguration Alternative (see ES1.7.2). Reduced flows may result in the partial loss of herbaceous riparian and wetland vegetation; cessation of flows would result in the long-term loss of woody and herbaceous riparian and wetland vegetation in these areas. Up to 32.88 acres of wetland vegetation that occurs within the maximum extent of the 10-foot groundwater drawdown contour may be impacted from groundwater drawdown.

Vegetation impacts under the Reconfiguration Alternative would be similar to the proposed project except that surface disturbance activities would disturb approximately 3,352 fewer acres of vegetation, and 325 fewer acres of vegetation that would be permanently lost as a result of pits that would not be reclaimed. Vegetation impacts under the WRM Alternative would be similar to the Reconfiguration Alternative, except that implementation of this alternative would result in a reduction of additional

636 acres of surface disturbance and 105 fewer acres of vegetation would be permanently lost as a result of pits that would not be reclaimed. Groundwater drawdown under the WRM Alternative is not anticipated to impact springs and associated wetland habitat in the project area.

ES1.7.5 Noxious Weeds and Invasive Species

Under the Proposed Action, implementation of surface disturbance activities as a result of proposed development and expansion would disturb approximately 4,357 acres within the proposed NOA; and approximately 2,740 acres within the proposed SOA. With the exception of open pits, all project components would be reclaimed, representing a permanent loss of 863 acres of vegetation within the proposed NOA; and a permanent loss of 347 acres of vegetation within the proposed SOA. All areas with surface disturbance are at risk for the spread of noxious weeds and invasive species.

Noxious weed and invasive species can degrade and modify native communities, reduce resources for native species, monopolize limited sources of moisture, and adversely affect native pollinators. In addition, noxious weeds and invasive species can reduce wildlife habitat, alter fire regimes, and degrade wetland and riparian areas. Noxious weeds and invasive species can easily spread into areas that typically lack or have minimal vegetation cover. It is anticipated that populations of invasive species (e.g., cheatgrass or Russian thistle) are the most likely to become established in localized areas where disturbance occurs for extended periods of time.

Under the Proposed Action and both action alternatives, implementation of the measures outlined in Barrick's applicant-committed environmental protection measures and reclamation plan, in conjunction with the Noxious Weed Control Plan, would reduce the potential for noxious weeds and invasive species establishment. Measures to be implemented to prevent the spread of noxious weeds and invasive species include seeding growth media stockpiles as soon as practical with an interim seed mix, use of certified weed-free hay and straw, and reclamation with a BLM-approved seed mixture. Successful reclamation of mine-related disturbance areas would result in the establishment of a permanent vegetative cover, which would minimize the potential establishment of noxious weeds and invasive species over the long term. Open pits would not be reclaimed; however, due to the absence of topsoil, the potential for establishment of noxious weeds and invasive species would be unlikely.

ES1.7.6 Wildlife and Fisheries Resources

The proposed project would result in the long-term reduction of approximately 7,097 acres of wildlife habitat, including approximately 3,051 acres of big sagebrush shrubland, 4,028 acres of pinyon-juniper woodland, 14 acres of mountain brush, and 6 acres of low sagebrush. The disturbed habitat associated with the proposed project would be reclaimed following completion of mining activities with the exception of open pits, representing a permanent loss of 1,210 acres of vegetation within the proposed NOA and SOA.

Groundwater drawdown within the predicted mine-related maximum extent of the 10-foot groundwater drawdown contour potentially may affect two springs within the NOA. Potentially impacted springs include the South Water Canyon and JBR No. 14 springs. Reduced flows may result in the partial loss of herbaceous riparian and wetland vegetation; cessation of flows would result in the long-term loss of woody and herbaceous riparian and wetland vegetation in these areas. Up to 32.88 acres of wetland vegetation that occurs within the maximum extent of the 10-foot groundwater drawdown contour may be impacted from groundwater drawdown. This impact would result in the reduction of available wildlife habitat within the NOA during periods of active groundwater pumping, plus the time period necessary for vegetation communities to restore once groundwater pumping ceases within the project area.

Impacts to wildlife habitat under the Reconfiguration Alternative would be similar to the Proposed Action except that surface disturbance activities would disturb approximately 3,352 fewer acres of habitat, and 325 fewer acres of habitat that would be permanently lost as a result of pits that would not be reclaimed. The WRM Alternative would have similar impacts to the Reconfiguration Alternative, except that

implementation of this alternative would result in 636 fewer acres of habitat disturbance, 104 fewer acres of permanent habitat loss (from pits that would not be reclaimed), and herbaceous riparian and wetland vegetation losses from groundwater drawdown would not be seen because there would be no impacts to springs within the study area based on groundwater modeling results.

Habitat loss or alteration under all action alternatives would result in direct losses of smaller, less mobile species of wildlife, such as small mammals, and the displacement of more mobile species into adjacent habitats. In areas where habitats are at, or near, carrying capacity, animal displacement could result in some unquantifiable reductions in local wildlife populations. Mine-related surface disturbance also would result in an incremental increase in habitat fragmentation at the mine site until vegetation has been re-established.

Indirect impacts under the Proposed Action and both action alternatives would include increased noise, additional human presence, and the potential for increased vehicle-related wildlife mortalities during construction and operations. Due to a lack of perennial water sources providing aquatic habitat within the study area (e.g., creeks, streams, lakes, etc.), no fisheries resources are found within the study area.

Potential direct impacts to big game (mule deer, pronghorn, and elk) would include the incremental long-term reduction of potential forage, the incremental increase in habitat fragmentation from vegetation removal associated with mine development activities, and the removal of existing continuous undisturbed north to south corridors located along the east and west side of the proposed NOA project area. The proposed NOA and SOA projects would result in the long-term direct removal of approximately 386 acres of the 5,011 acres (8 percent) of undisturbed mule deer year-round habitat within the study area; approximately 2,180 acres of the 10,462 acres (20 percent) of undisturbed mule deer winter range within the study area; and approximately 2,415 acres of the 18,211 acres (13 percent) of mule deer crucial winter range within the study area. These habitats consist primarily of big sagebrush and pinyon-juniper habitat.

The proposed project occurs within an important mule deer migration corridor where deer migrate seasonally between summer range habitat in the Ruby and East Humboldt mountain ranges to winter range habitat south of the project area on Buck Mountain and along US-50 in the vicinity of Antelope Summit. Historically, the Management Area 10 mule deer herd has experienced increased mortality during severe winter events. As a result, overall Management Area 10 mule deer herd hunt tag allocations in Management Area 10 were also reduced. Under the Proposed Action, the Management Area 10 mule deer herd would likely experience declines in overall fitness and recruitment due to the removal of important migratory habitat within the NOA study area. As a result of these declines in fitness, it is anticipated that seasonal mule deer mortality within Management Area 10 would be increased. The potential for increased mortality would likely be enhanced during years where severe winter conditions are present during migration periods due to the fact that mule deer would be forced to expend greater time and energy to navigate through the study area in order to reach crucial winter habitats.

Impacts under the Proposed Action would be reduced by the mule deer design features that would include: providing matched berm cuts along haul roads in designated mule deer migration corridors; designing haul road cuts at a slope to facilitate migration; maximizing the use of natural topography where possible; requiring that RDAs be recontoured to 3 horizontal:1 vertical or shallower slopes; RDA edges would be reclaimed concurrently to RDA construction to maximize the vegetated portion of the RDA as soon as possible; limitations on exploration activities in designated migration corridors; all interpit areas would be reclaimed as soon as activity in them is complete and reclamation would include the planting of shrub seedlings and use of pinyon-juniper skeletons to provide for security cover in designated migration corridors within the NOA. Successful implementation of these design features under the Proposed Action would facilitate deer migration through disturbed areas and would provide assistance to deer in traversing haul roads. This would reduce impacts to migrating mule deer but would not entirely remove the risks described above.

Under the Reconfiguration Alternative, the proposed NOA and SOA projects would result in the long-term direct removal of approximately 320 acres of the 5,011 acres (6 percent) of undisturbed mule deer year-round habitat within the study area; approximately 1,789 acres of the 28,674 acres (6 percent) of undisturbed mule deer winter range within the study area; and approximately 1,934 acres of the 18,211 acres (11 percent) of mule deer crucial winter range within the study area. These habitats consist primarily of big sagebrush and pinyon-juniper habitat. The Reconfiguration Alternative was developed, in part, to address potential impacts to mule deer migration. This alternative has modified mining features to help facilitate mule deer movement through the proposed NOA. The NDOW submitted a "minimum corridor width and quality" memo to assist in the development of facility reconfigurations. This information was taken into account during alternatives development to the greatest extent possible. The alternative also incorporated a mule deer monitoring program to determine the effectiveness of the mule deer design features and other measures developed in supporting mule deer migration through the project area, and make adjustments, if needed, based on the monitoring data collected.

Under the Reconfiguration Alternative, a total of three designated mule deer migration corridors would be maintained within the Numbers Area, Redbird and Rat areas, and Poker Flats and Duke areas of the NOA project. Areas of undisturbed land within the designated mule deer migration corridors range from 730 to 4,450 feet in width.

As compared to the Reconfiguration Alternative, the WRM Alternative would disturb 211 fewer acres of mule deer crucial winter range and would provide the opportunity for improved migration through the maintenance of wider corridors through the western portion of the NOA (ranging from 730 to 4,300 feet in width). The availability of migration corridors throughout the project area and successful implementation of design measures and adaptive management is considered a key factor in the long-term sustainability of the Management Area 10 mule deer herd as multiple route migratory patterns are more common in temperate ungulate populations than single route patterns (Sawyer et al. 2009). These corridors fluctuate in width and are generally wider than the 2,000-foot minimum (with a few exceptions) recommended by NDOW. The modification of proposed facilities under the WRM Alternative would further facilitate mule deer migration through the NOA by conserving important stopover sites used by mule deer in between periods of migratory movement.

The WRM Alternative includes additional operational modifications to facilitate mule deer migration through the western portion of the NOA. Under the WRM Alternative, the provision of the undisturbed mule deer migration corridors, concurrent reclamation combined with the implementation of the mule deer design features and any modifications to these design features resulting from the mule deer monitoring program would provide for continued mule deer migration through the NOA. This would substantially decrease the risk to the mule deer herds arising from severe winter events in comparison with the Proposed Action and Reconfiguration Alternative by maintaining undisturbed corridors between important seasonal habitats, but would not entirely remove the risks described above. It is recognized that proposed mitigation measures outlined in Section 3.7.2.6 will have a substantial economic impact on the mining operations.

Under the Proposed Action, direct impacts to small game and nongame species would include the incremental long-term reduction of approximately 7,097 acres of potentially suitable habitat and permanent removal of 1,210 acres. Impacts also would include displacement from the disturbance areas and increased habitat fragmentation, until reclamation has been completed and vegetation is re-established. Under the Reconfiguration Alternative, direct impacts to small game and nongame species would include the incremental long-term reduction of approximately 5,175 acres of potentially suitable habitat and 885 acres of habitat that would be permanently lost as a result of pits that would not be reclaimed. Impacts to small game and nongame species under the WRM Alternative would be reduced by an additional 636 acres (as compared to the Reconfiguration Alternative), and 780 acres of habitat that would be permanently lost as a result of pits that would not be reclaimed.

Under the Proposed Action, potential direct impacts to avian species would include the temporary loss of approximately 7,097 acres of potentially suitable breeding, roosting, and foraging habitat and permanent removal of 1,210 acres. However, this temporary loss is expected to have little effect on local bird populations based on the amount of suitable breeding and foraging habitat in the surrounding area. Barrick has been actively coordinating with the U.S. Fish and Wildlife Service to develop a Bird and Bat Conservation Strategy and an Eagle Conservation Plan (ECP). Impacts to passerine species migrating through the project vicinity at night may also occur as a result of artificial lighting used during nighttime mining operations. In order to reduce the impact of light pollution resulting from nighttime mining operations Barrick has committed to installing anti-glare fixtures authorized by the BLM Egan Field Office.

Under the Reconfiguration Alternative, direct impacts to avian species would include the incremental long-term reduction of approximately 5,175 acres of potentially suitable habitat and 885 acres of habitat that would be permanently lost as a result of pits that would not be reclaimed. Impacts to avian species under the WRM Alternative would be reduced by an additional 636 acres (as compared to the Reconfiguration Alternative), and 780 acres of habitat that would be permanently lost as a result of pits that would not be reclaimed.

ES1.7.7 Special Status Wildlife and Fisheries

Impacts to some special status species would include the long-term loss of approximately 7,097 acres of potentially suitable habitat. Available suitable habitat varies by species within the study area and potential impacts to these species as a result of the proposed project would vary. A long-term loss of approximately 3,051 acres of big sagebrush would potentially impact some special status species.

Potential direct impacts would include the long-term loss of approximately 1,156 acres (14 percent) of the 7,410 acres of Priority Habitat Management Areas (PHMA) within the study area, and 1,577 acres (16 percent) of the 9,828 acres of General Habitat Management Areas (GHMA), and approximately 1,571 acres (14 percent) of the 10,951 acres of Other Habitat Management Areas (OHMA) within the study area. These direct impacts to greater sage-grouse habitat also represent approximately 0.11, 0.16, and 0.20 percent of all PHMA, GHMA, and OHMA currently available within the Ruby Valley and Butte/Buck/White Pine Population Management Units (PMUs), respectively. Further information and discussion of additional greater sage-grouse management objectives, management decisions, required design features, and compensatory mitigation approaches is presented in **Appendix A** of this EIS.

The Reconfiguration Alternative was developed, in part, to address potential impacts to greater sage-grouse leks and associated habitats. The Reconfiguration Alternative would disturb sagebrush habitat during project construction and operation activities. Potential direct impacts would include the long-term loss of approximately 704 acres (10 percent) of the 7,410 acres of PHMA within the study area, and approximately 1,301 acres (13 percent) of the 9,828 acres GHMA, and 1,548 acres (14 percent) of the 10,951 acres of OHMA within the study area. These direct impacts to greater sage-grouse habitat also represent approximately 0.06, 0.13, and 0.21 percent of all PHMA, GHMA, and OHMA currently available within the Ruby Valley and Butte/Buck/White Pine PMUs, respectively. Specific modifications made to reduce impacts to greater sage-grouse under the Reconfiguration Alternative include the following:

- The Royale facilities and the north south haul road from the Poker Flats area to the Royale area would not be constructed. Under the Proposed Action the nearest known active greater sage-grouse lek would be located approximately 5,668 feet from the proposed haul road between the Poker Flats and Royale area.
- The proposed Gator HLF and associated process facilities would not be constructed under this alternative, which result in 358 acres less disturbance in comparison to the Proposed Action. To accommodate the heap leach material from the Vantage, Luxe, and Gator pits, the proposed Vantage HLF would be expanded to the east and south by approximately 59 acres.

Under the WRM Alternative, impacts to sage-grouse would be reduced from those disclosed under the Reconfiguration Alternative. Potential direct impacts would include the long-term loss of approximately 704 acres (10 percent) of the 7,410 acres of PHMA within the study area, 1,127 acres (11 percent) of the 9,828 acres of GHMA within the study area, and 1,323 acres (12 percent) of the 10,951 acres of OHMA within the study area. These direct impacts to greater sage-grouse habitat also represent approximately 0.06, 0.11, and 0.17 percent of all PHMA, GHMA, and OHMA currently available within the Ruby Valley and Butte/Buck/White Pine PMUs, respectively. No impacts to springs or wetlands habitat are anticipated in the project area from groundwater drawdown under the WRM Alternative.

Impacts to other special status species from surface disturbance or groundwater drawdown are not anticipated under the WRM Alternative.

ES1.7.8 Livestock Grazing

The Proposed Action would temporarily (25 years) remove approximately 418 Animal Unit Months (AUMs) within the Warm Springs grazing allotment, representing a 2 percent decrease of the total available AUMs within the Warm Springs grazing allotment. Reclamation of all mine components except open pits would result in the permanent loss of 85 AUMs within the Warm Springs grazing allotment and would represent a one percent decrease of the active permitted use of 7,709 AUMs. The Proposed Action would temporarily remove approximately 35 AUMs within the Maverick Springs grazing allotment, representing a 2 percent decrease of the total available AUMs within the Maverick Springs grazing allotment. The permanent loss of four AUMs within the Maverick Springs grazing allotment due to the open pits that would not be reclaimed would be negligible (less than 1 percent) in comparison to the overall available acreage and AUMs within the Maverick Springs grazing allotment. This reduction in AUMs would not affect current grazing operations within either allotment.

Under the Proposed Action, no impacts to cattle guards, wells/pumps, or troughs are anticipated. Approximately 4.233 feet of existing fencing, and approximately 2,316 feet of water pipelines would be removed as a result of implementation of the Proposed Action.

Based on the site conditions and groundwater model predictions, drawdown associated with groundwater pumping for the mine could impact (i.e., reduce) the baseflow and associated wetlands at South Water Canyon and JBR No. 14 springs under the Proposed Action. Groundwater drawdown from the proposed project may result in the long-term loss of these two springs within the Warm Springs and Maverick Springs allotments. A reduction in water quality is not anticipated due to implementation of Barrick's PoO and associated applicant-committed environmental protection measures.

Construction activities and traffic along unpaved roads would result in varying degrees of fugitive dust emissions which may reduce palatability and overall vegetation and result in negative physical effects to livestock health, particularly in calves. Implementation of Barrick's dust control plan would minimize impacts from fugitive dust as a result of construction and operational activities. Indirect impacts to livestock may include the introduction or spread of noxious weeds and invasive species potentially resulting in the reduction of available forage quality and quantity.

Increased traffic volumes could result in increased rates of livestock-vehicle collisions. The continued implementation of Barrick's Traffic Management Plan, including compliance with posted speed limit signs, would minimize the risks associated with potential livestock-vehicle collisions. During their current mining operations, Barrick has effectively controlled the speed limits of project-related traffic, resulting in zero livestock-vehicle collisions since January 2009.

Livestock exposure to open pits, process ponds, storm water/event ponds, HLFs, and other areas of cyanide use would be prevented through the use of 8-foot-high wildlife exclusion fencing in accordance with NDOW guidelines. Outside of these exclusion areas, livestock grazing would continue throughout the Warm Springs and Maverick Springs grazing allotments. Access roads would not be fenced and fencing around individual project components would not interfere with the ability for livestock to graze or

inhibit their movement patterns. Contamination risk to livestock would be eliminated through the implementation of these applicant-committed environmental protection measures.

The Reconfiguration Alternative would have the same impacts to range resources as the Proposed Action with the following exceptions. Approximately 344 AUMs would be temporarily removed within the Warm Springs grazing allotment, representing a 1 percent decrease of the total available AUMs within the Warm Springs grazing allotment. The permanent loss of 60 AUMs within the Warm Springs grazing allotment would be negligible (less than 1 percent) in comparison to the overall available acreage and AUMs within the Warm Springs grazing allotment. The Reconfiguration Alternative would temporarily remove approximately 11 AUMs within the Maverick Springs grazing allotment, representing a 1 percent decrease of the total available AUMs within the Maverick Springs grazing allotment. There would be a permanent loss of four AUMs within the Maverick Springs grazing allotment, the same permanent impact as under the Proposed Action.

Under the WRM Alternative, impacts to the Maverick Springs grazing allotment would be the same as under the Reconfiguration Alternative. The WRM Alternative would temporarily remove approximately 23 fewer AUMs within the Warm Springs grazing allotment than the Reconfiguration Alternative (105 acres, less than 1 percent of the total available AUMs within the allotment) and there would be 8 fewer AUMs of permanent loss within the Warm Springs grazing allotment (52 AUMs, less than 1 percent of the allotment). Groundwater drawdown is not anticipated to impact springs or associated wetlands potentially utilized by livestock under the WRM Alternative.

ES1.7.9 Wild Horses

Under the Proposed Action, implementation of surface disturbance activities as a result of proposed development and expansion would include the long-term removal approximately 7,072 acres of available forage within the Triple B Herd Management Area (HMA) within the combined NOA and SOA projects. With the exception of open pits and pit backfill areas, all project components including associated ancillary and support facilities would be reclaimed resulting in a permanent loss of 1,210 acres of forage, representing less than 1 percent of the Triple B HMA.

Indirect impacts to wild horses may include the introduction or spread of noxious weeds and invasive species potentially resulting in the reduction of available forage quality and quantity.

Wild horse-vehicle collision risk would be minimized through implementation of Barrick's Traffic Management Plan (see Livestock Grazing section above).

Wild horse exposure to process ponds and other areas of cyanide use would be prevented through fenced exclosures. Access roads would not be fenced and fencing around individual project components would not interfere with the ability for wild horses to roam or their movement patterns.

Based on the site conditions, and model predictions, drawdown associated with groundwater pumping for the mine under the Proposed Action and Reconfiguration Alternative could impact (i.e., reduce) the baseflow and associated wetlands at South Water Canyon and JBR No. 14 springs. Groundwater drawdown from the proposed project may result in the long-term loss of these two springs within the Triple B HMA.

Under the Reconfiguration Alternative, impacts to wild horses would be similar to the Proposed Action except that project activities would result in 3,352 fewer acres of long-term surface disturbance. Permanent acreage loss under the Reconfiguration Alternative would be reduced by 325 acres.

Impacts to wild horses under the WRM Alternative would be similar to those discussed under the Reconfiguration Alternative, except that new surface disturbance within the Triple B HMA in the proposed NOA would decrease by an additional 402 acres. Permanent acreage loss would be reduced

by an additional 104 acres. Groundwater drawdown under the WRM Alternative is not anticipated to impact springs and associated wetlands utilized by wild horses in the project area.

ES1.7.10 Paleontological Resources

Potential impacts to any paleontological resources would be the result of surface disturbing activities physically destroying or degrading fossils. Under the Proposed Action, implementation of surface disturbance activities as a result of proposed development and expansion would disturb approximately 7,097 acres within the proposed NOA and SOA.

The proposed project would have a low risk of impact to significant paleontological resources because most of the study area exhibits very little potential of having vertebrate fossils. This is supported by the few reports of fossils in these formations. If paleontological resources of potential scientific interest are encountered, then the resource would be left intact and immediately brought to the attention of the BLM Authorized Officer. Indirect impacts including the potential increased accessibility to fossil beds from improved access to remote areas and subsequent illegal collection would be mitigated by prohibiting public access within the proposed NOA and SOA during operations.

Under the Reconfiguration Alternative, impacts would be similar to the Proposed Action except, surface disturbance activities would remove approximately 3,352 fewer acres resulting in a lower risk of encountering significant paleontological resources compared to the Proposed Action. Impacts from the WRM Alternative would be similar to, but slightly reduced from, the Reconfiguration Alternative, as there would be 636 fewer acres of proposed surface disturbance within the proposed NOA.

ES1.7.11 Cultural Resources

Surface disturbance associated with development and expansion of the Proposed Action could result in direct effects to historic properties. Implementation of the Proposed Action would result in approximately 7,097 acres of surface disturbance within the proposed NOA and SOA. These effects could result in the vertical and horizontal displacement of soil containing cultural resources and the resulting loss of integrity, loss of information, and alteration of a site's setting.

Under the Proposed Action, a total of 596 sites are located within currently proposed disturbance areas including 446 prehistoric sites, 82 historic sites, and 68 multi-component sites. Of the 596 sites, 64 are eligible for the National Register of Historic Places (NRHP), 429 are not eligible, 3 remain unevaluated, 10 have been mitigated, 13 could not be relocated, and 77 sites have been destroyed by previous disturbance. The potential for the discovery of unanticipated archaeological deposits during construction activities exists within newly proposed disturbance areas and could result in additional direct effects such as displacement or loss (either complete or partial) of the discovered material.

Potential indirect effects associated with the Proposed Action could include changes in erosion patterns caused by construction, soil compaction, or vegetation removal, and vandalism, inadvertent damage, and/or illegal artifact collection due to increased numbers of people in the study area. Other potential indirect effects could include the introduction or expansion of visual or auditory elements that diminish the integrity of the historic property's significant historic features, including setting. These effects could result from introducing modern structures and associated auditory emissions into an otherwise rural or natural setting.

Under the Proposed Action, there would be potential visual effects to the setting of the Pony Express National Historic Trail, Ruby Valley Pony Express Station, Fort Ruby National Historic Landmark, and Sunshine Locality National Register District. In addition, the Proposed Action would increase the amount of visual contrast that currently exists between the existing/authorized facilities and the natural character of the landscape.

If the BLM determines that a historic property would be adversely affected, measures to minimize or mitigate such effects would be proposed in accordance with the Programmatic Agreement (PA). Such measures could include:

- Data recovery, which might include the systematic professional excavation and removal of archaeological resources;
- The use of landscaping or other techniques that would minimize or eliminate visual effects on a historic property's setting; or
- Historic American Buildings Survey/Historic American Engineering Record/Historic American Landscapes Survey or other agreed upon historic recordation process.

Per the PA, unavoidable adverse effects to historic properties would be mitigated through implementation of a Treatment Plan. Following concurrence with the Treatment Plan, the State Historic Preservation Office, interested tribes, and other consulting parties, the BLM would ensure that the Treatment Plan is implemented within the timelines set forth in the plan. Potential indirect effects to archaeological sites as a result of surface water runoff are anticipated to be minor based on implementation of erosion control measures. In order to minimize the potential for illegal collection, vandalism, and inadvertent damage associated with increases in the number of people in the study area, Barrick would provide in-house training to ensure that all its personnel and all the personnel of its contractors and subcontractors are directed not to engage in the illegal collection of prehistoric and historic artifacts.

Additionally, as provided in the PA and applicant-committed environmental protection measures, if any previously unknown cultural resources are discovered during construction, all construction activities would immediately cease within 100 meters of the discovery and the BLM Authorized Officer would be notified of the find. Steps would be taken to protect the site from vandalism or further damage until the BLM Authorized Officer evaluated the nature of the discovery. Construction would not resume in the area of the discovery until the BLM Authorized Officer issued a Notice to Proceed.

Under the Reconfiguration Alternative, impacts would be similar to the Proposed Action, except surface disturbance activities would consist of approximately 3,352 fewer acres. A total of 472 sites are located within currently proposed disturbance areas under the Reconfiguration Alternative including 356 prehistoric sites, 63 historic sites, and 53 multi-component sites. Of the 472 sites, 54 are eligible for the NRHP, 323 are not eligible, 2 remain unevaluated, 9 have been mitigated, 7 could not be relocated, and 77 sites have been destroyed by previous disturbance.

Under the Reconfiguration Alternative, the potential visual effects to the Pony Express National Historic Trail, the Fort Ruby National Historic Landmark, and the Ruby Valley Pony Express Station would be reduced substantially as compared to the Proposed Action. The expanded and reconfigured facilities would result in moderate visual effects because the facilities would be seen as extensions of the existing/authorized (past and present) disturbances; whereas, under the Proposed Action, the North Poker Flats HLF facility would reach the skyline and result in moderate to strong contrasts within the viewshed of the trail, station, and landmark. Visual effects to the setting of the Sunshine Locality National Register District are not anticipated due to the removal of the Gator HLF, Gator Process Area, and associated ancillary facilities. All other visual effects associated with this alternative would be similar to the Proposed Action.

Impacts from the WRM Alternative would be the same as the Reconfiguration Alternative except there would be 7 fewer sites within proposed disturbance areas (1 prehistoric site, 2 historic sites and 4 multi-component sites). Visual effects to the Pony Express National Historic Trail (Key Observation Point [KOP]-2), the Fort Ruby National Historic Landmark (KOP-8), and the Ruby Valley Pony Express Station (KOP-9) would be the same as the Reconfiguration Alternative.

ES1.7.12 Native American Traditional Values

Under the Proposed Action, potential direct impacts would include the temporary loss of approximately 7,097 acres of lands potentially used by Native Americans for hunting, pine nut gathering, and other traditional uses. This impact is considered to be negligible as no properties of traditional religious and cultural importance to the tribes have been identified to date within the study area through tribal consultation or cultural resource inventory; however, the project area may have been used by tribes in the past for pine nut gathering and hunting. Tribal consultation remains ongoing and would continue through project completion. If a property of traditional religious and cultural importance is identified by tribal representatives, and avoidance is not feasible, specific operating procedures, stipulations, or mitigation measures would be developed in consultation with the affected tribal groups with the goal of reducing or eliminating impacts to the identified site. If mitigation is required at a site of tribal importance, a Treatment Plan would be developed in consultation with interested tribal groups, and in accordance with the PA.

As provided in the PA and applicant-committed environmental protection measures, if any previously unknown cultural resources (including human remains and associated funerary objects) are discovered during construction, all construction activities would immediately cease within 100 meters of the discovery and the BLM Authorized Officer would be notified of the find. Steps would be taken to protect the site from vandalism or further damage until the BLM Authorized Officer evaluated the nature of the discovery. Construction would not resume in the area of the discovery until the BLM Authorized Officer issued a Notice to Proceed.

Drawdown effects resulting from mine pumping under both the Proposed Action and Reconfiguration Alternative could occur within the NOA at South Water Canyon and JBR No. 14 springs. The potential reduction of flows at natural springs due to groundwater pumping is of great concern to the Western Shoshone tribe who consider water sources as being sacred.

Under the Reconfiguration Alternative, potential direct impacts would be similar to the Proposed Action, except surface disturbance activities would consist of approximately 3,352 fewer acres of lands potentially used by Native Americans for hunting, pine nut gathering, and other traditional uses in comparison to the Proposed Action.

Impacts from the WRM Alternative would be similar to, but reduced from, the Reconfiguration Alternative, as there would be 636 fewer acres of proposed surface disturbance within the proposed NOA that are potentially used by Native Americans for hunting, pine nut gathering, and other traditional uses. Groundwater drawdown under the WRM Alternative is not anticipated to impact springs in the project area.

ES1.7.13 Air Quality

Air dispersion modeling results indicate that the proposed project would not exceed state or national ambient air quality standards for particulate matter with an aerodynamic diameters of 2.5 microns or less ($PM_{2.5}$), particulate matter with an aerodynamic diameters of 10 microns or less (PM_{10}), nitrogen dioxide, carbon monoxide, and sulfur dioxide. Based on the total surface area of the proposed RDAs, active and inactive HLFs, and open pits, the Proposed Action has a potential to emit 0.04 ton per year (approximately 84 pounds per year) of fugitive mercury emissions. This is approximately 2.1 percent of the global background mercury deposition for the area; (e.g., deposition of mercury emissions within the project area from sources outside the U.S., Canada and Mexico). The contribution of mercury emissions from the BMM to watersheds more distant from the mine would be 0.2 percent of background, or less.

The Jarbidge Wilderness, the closest Class I area, is located approximately 180 km north of the mine site. An air dispersion modeling analysis was conducted to assess air quality concentrations from the Proposed Action; the resultant maximum modeled concentrations were shown to be less than the Class I significant impact levels.

Air emissions, including point and fugitive sources, would be controlled in accordance with State and Federal air quality operating permits for the proposed NOA and SOA projects and with present BMPs. BMPs include use of dust abatement techniques on unpaved, unvegetated surfaces to minimize airborne dust; maintenance of equipment to ensure proper function; posting and enforcing speed limits; use of dust abatement techniques before and during surface clearing, excavation, or blasting activities; and compliance with the Operator's NDEP air permit.

Under the Reconfiguration Alternative and WRM Alternative, operation levels and associated impacts would be similar to the Proposed Action, but with a reduced mine life of 10 years compared with 20 years for the Proposed Action resulting in a reduction of total emissions and long-term resource impacts during the life of mine period. Additionally, all applicant-committed measures described for the Proposed Action would, as applicable, be required for the Reconfiguration Alternative and WRM Alternative.

ES1.7.14 Land Use and Access

ES1.7.14.1 Land Use

Under the Proposed Action, the proposed NOA and SOA plan boundaries would encompass 41,950 acres resulting in a net increase of 18,138 acres compared to the existing plan boundaries. Implementation of surface disturbance activities as a result of proposed development and expansion would temporarily remove approximately 7,097 acres from other land uses within the proposed NOA and SOA. Although existing rights-of-way (ROWs) granted by the BLM for other land uses are located within the NOA and SOA plan boundaries, proposed actions under all action alternatives would not impact these ROWs.

The Proposed Action is consistent with BLM plans and policies that designate land use within the proposed NOA and SOA projects as open for mineral exploration and development, as described in the BLM Ely Resource Management Plan.

Under the Proposed Action, surface disturbance would reduce the amount of land available for livestock grazing and dispersed recreation (see ES1.7.8), although the loss would be very small relative to the overall area, particularly considering the limited current use levels. None of the proposed surface disturbance would occur on currently irrigated cropland; therefore, a loss of crop production would not occur as a result of the Proposed Action.

The Proposed Action would require the development of six transmission lines (totaling approximately 22 miles) and the construction and upgrade of three substations. The transmission lines would utilize single pole structures and would range from 24.9 kV to 69 kV. Mount Wheeler Power supplies aforementioned electrical power to the existing transmission lines and associated substations and transformers, and would continue to provide proposed electrical power needs to the proposed NOA and SOA projects. Barrick would obtain necessary permits from, and coordinate construction and operation specifications (including engineering design considerations) with Mount Wheeler Power. New transmission lines would not adversely affect land use or power availability in the area.

Post-reclamation land use would be returned to open space, grazing, dispersed recreation, and wildlife habitat. These uses would be consistent with local and BLM land use plans and guidelines.

Under the Reconfiguration Alternative, impacts would be similar to the Proposed Action, except there would be 3,352 fewer acres of surface disturbance to land available for livestock grazing and dispersed recreation.

Impacts from the WRM Alternative would be similar to the Reconfiguration Alternative, except there would be 636 fewer acres of proposed development and expansion in the NOA.

ES1.7.14.2 Access

Three categories of traffic would be generated by the proposed NOA and SOA projects: 1) worker commuting traffic, 2) general company and contractor traffic, and 3) material deliveries. It is estimated that for the Proposed Action, haul road traffic may increase by 20 percent, but no more than 30 percent at various points within the life of mine plan.

Under the Proposed Action, approximately 26,045 feet of existing roads and two-tracks would be re-routed around the proposed Vantage facilities within the SOA. Alternate routes for public access would be available during construction and signage would be put in place to advise the public of road closures and alternative routes. The resulting highway safety conditions would be slightly degraded and would be dependent partially on the level of traffic through the mine and public road intersections. Development of the proposed NOA and SOA projects also would modify mine road and public road intersections; however, appropriate measures would be implemented to reduce the safety risk and safely manage the flow of traffic. Increases in traffic over ambient levels, including heavy vehicles, would be minimal. As such, any increase in the risk of traffic accidents would be minor and proportional to the overall increase in traffic.

A Traffic Management Plan has been developed to provide standard construction, operation, and maintenance practices for light vehicles and mine equipment traffic using public access routes and locations where mine roads intersect public roads. Based on this analysis, the effects of the Proposed Action on land use and access in the project vicinity would be considered minor.

Under the Reconfiguration Alternative, impacts would be similar to the Proposed Action; however, these impacts would be shorter in duration under this alternative than the Proposed Action due to the shorter mine life (10 years) compared with 20 years for the Proposed Action. Impacts from the WRM Alternative would be the same as the Reconfiguration Alternative, except some haul roads would have restrictions on truck traffic to benefit mule deer.

ES1.7.15 Recreation

Public access for recreational purposes would be prohibited within the proposed NOA and SOA disturbance areas per Mine Safety and Health Administration requirements. The proposed NOA and SOA boundaries would increase by a total of 18,138 to 41,950 acres. Public access would be controlled with fences and locked gates or other physical methods, therefore restricting recreational access within these areas. However, most of this restricted area receives low to moderate recreational use at the present time because of minimal recreational opportunities and resources. Also, there is extensive public land in the immediately surrounding area that could accommodate migration of dispersed recreation activity from the proposed NOA and SOA boundaries, although some recreationists who have utilized a specific area that would no longer be accessible may not be accommodated by a shift to alternative nearby recreational options.

The Proposed Action may deter access to Humboldt-Toiyabe National Forest and Ruby Lake NWR to some degree due to increased traffic from construction personnel and construction-related equipment deliveries. However, main public access roads to these areas, such as White Pine County Road 3 (Long Valley Road) and State Highway 892 (Strawberry Road) are lightly utilized and it is anticipated that any project related increase in traffic would not preclude access to recreational destinations in a meaningful way. Access to Humboldt-Toiyabe National Forest and Ruby Lake NWR also would be available from the north via State Highway 226 and Ruby Valley County Road 1 (Ruby Valley Road). The Pony Express Trail is expected to be available to visitors; however, visitors would potentially experience visual impacts from the proposed project when visiting the trail.

As a result of the project, it is estimated that approximately 383 people would relocate as new residents to the surrounding communities in Elko, White Pine, and Eureka counties during the life of the mine. This would result in a slight increase in the demand for recreation resources and opportunities in the region.

This increase would be very small in the context of the existing population base. Ample public land is available in the region to accommodate dispersed recreation needs of the increased population. Minor effects to parks and other developed recreation facilities may occur in the communities where the increase in population would reside, primarily Ely, Eureka, and Elko, Nevada.

Mule deer hunting and viewing opportunities could be potentially reduced due to the potential reduction in mule deer population from the development of mine facilities within mule deer migration areas and severe winters. Reductions in mule deer population could result in the reduction of available hunting tags allocated by the NDOW.

With the exception of open pits and pit backfill areas, all project components would be reclaimed in accordance with the Reclamation Plan and would be available for dispersed recreation use. However, recreational opportunities and resources would likely remain minimal.

Based on the implementation of these design features and environmental measures, the ample supply of alternative land for dispersed recreation activities, and the lack of unique recreation resources, the effects of the Proposed Action on recreation within and adjacent to the proposed NOA and SOA projects would be considered minor.

Effects of the Reconfiguration Alternative and the WRM Alternative on recreation would be similar to those described for the Proposed Action, except there would be a shorter mine life (10 years instead of 20 years), and mule deer hunting and viewing opportunities would be impacted to a lesser degree as a result of reduced impacts to mule deer population. As compared to the Reconfiguration Alternative, the WRM Alternative would further reduce impacts to mule deer hunting and viewing opportunities near the study area through development of wider migration corridors, traffic restrictions, and snow management.

ES1.7.16 Socioeconomics

Under the Proposed Action, total employment, at peak, would increase by 332 additional workers over current levels (450 existing workers), including contractors. After the end of a construction spike in 2018, total employment would drop by over 100 and continue at approximately that level, with some variability, through 2024. As a result, unemployment would decrease and income would increase, leading to additional local revenue.

Construction of the mine would have a major, positive, short-term fiscal effect on the entities within the affected area, and operation and maintenance of the mine would have a long-term, major, positive fiscal effect. These effects would cease at the time the proposed NOA and SOA mines were closed and reclaimed. Construction employment and the income generated by construction would have a beneficial, major, and short-term impact for residents and businesses located in the affected area. The project also would support some jobs in other industry sectors in the area. The effects to businesses and local governments would be beneficial, moderate and short-term. Businesses would benefit from purchases made by construction workers. The operations and maintenance phases of the Proposed Action would result in a slight increase in population. According to existing patterns, if the peak population potential should occur, approximately 305 additional people would locate in Elko County, which would add only 0.6 percent to the county population; 56 people (0.6 percent of the current population) would locate in White Pine County; and 22 people (1.1 percent of the county population) would locate in Eureka County. Population increases at these levels would not exceed the infrastructure capacities of any of the three counties.

The impact of operations and maintenance on housing would be minor, as it is not anticipated that there would be a housing shortage associated with the mine work force as a large share of the work force would be hired from the area and already have homes in the area. A maximum of 200 contract construction workers is expected to be needed for the Proposed Action. Assuming most construction workers would be hired from the local labor force, they would not affect the housing market to any substantial degree. If substantial numbers of the anticipated contractor work force were brought in from

outside the area, then there is an ample supply of temporary housing resources available to accommodate them with well over 2,000 motel/hotel rooms, over 500 recreational vehicle spaces, and several campgrounds in the local area.

The relatively small number of new people that would be anticipated for construction and operation of the Proposed Action, even under the maximum scenario, would not be expected to adversely affect public services in the area. School enrollment would increase by between 52 and 80 students under the estimated average and peak population growth scenarios for operations at the proposed NOA and SOA projects. At these levels of increase, the effects would be minor and would not adversely affect district schools.

Both the construction and the operation, maintenance, and abandonment phases of the mine would generate an increase in sales and use tax receipts. Purchases of equipment, supplies, and construction materials needed by the Proposed Action would be subject to sales tax as would consumer purchases by the construction work force. In short, construction of the mine would have a major, positive, short-term fiscal effect on the entities within the affected area, and operation and maintenance of the mine would have a long-term, major, positive fiscal effect. These effects would cease at the time the proposed NOA and SOA mines were closed and abandoned.

With only a modest change in permanent employment and a minor increase, at most, in population expected from the proposed NOA and SOA projects, the Proposed Action is not expected to cause adverse changes in the social structure or traditional lifestyles of study area communities.

As noted above in Section ES1.7.6, Wildlife and Fisheries Resources, impacts to the local mule deer herd could result from mining activities under the Proposed Action. Because it is not possible to accurately quantify changes in the local deer herd population from the Proposed Action, the resulting specific economic effects are similarly difficult to accurately quantify. However, employing the general deer hunting-related economic assumptions from recent years, noted above, an estimate of a range of socioeconomic impacts can be made based on potential incremental population fluctuations in deer populations. For example, if it is assumed that the Proposed Action would adversely affect the deer herd to the extent that Management Area 10 hunt tags would be reduced by 10 percent, the effect on hunting expenditures would be a reduction of approximately \$2.5 million, or 2.7 percent of 2011 statewide big game hunting expenditures. State and local tax revenues would be reduced by approximately \$203,000 statewide.

Under the Reconfiguration Alternative, socioeconomic impacts would be similar to the Proposed Action, except these effects would be shorter in duration under this alternative than the Proposed Action due to the shorter mine life (10 years) compared with 20 years for the Proposed Action. As with the Proposed Action, effects would cease at the time the mines were closed and abandoned.

Total employment, at peak, would increase by 132 (200 fewer workers than the Proposed Action) additional workers over the current levels, including contractors. After the end of a construction spike in 2018, total employment would decline by approximately 200 workers by 2020 and level off at and continue at approximately 366 workers through 2023 before declining to 66 workers in 2025 when operations end. Unemployment would decrease, but less so than under the Proposed Action. Likewise, income would increase leading to additional local revenue; however, the increase would be slightly less than under the Proposed Action.

Effects of the WRM Alternative would be similar to, but slightly reduced from, those described for the Reconfiguration Alternative, due to a reduction in employment levels in the NOA (maximum number of employees would be reduced from 511 to 498, in 2017; however, minimum numbers of employees in the NOA (41 in year 2025) would be the same as the Reconfiguration Alternative). Employment in the SOA would be the same as the Reconfiguration Alternative. The WRM Alternative would have a more positive

outcome for the Management Area 10 deer herd than the other identified alternatives and thus would have a positive effect on the socioeconomics of hunting.

ES1.7.17 Environmental Justice

The potential effects of the Proposed Action and the Reconfiguration Alternative would not be expected to disproportionately affect any particular population. The area in the immediate vicinity of the Proposed Action has no resident population. The residents of the nearby ranches have not been identified as minority or low-income in nature. The nearest residential area is the community of Eureka, approximately 25 air miles to the southwest. The nearest concentrations of American Indians are the Ely Shoshone Reservation lands, which are approximately 65 air miles to the southeast. The only likely effects would be air quality related and would be minor in scope. These impacts would affect the entire population equally, without regard to ethnicity, race, or economic status.

Adverse effects to cultural, historical, or protected resource of value to a Native American tribe or minority population would not likely occur. If impacts would occur, they would be effectively minimized or mitigated through implementation of the PA and Treatment Plan. In addition, there has been an extensive effort to involve the Native American communities in the process through consultation specific to the Proposed Action.

Impacts associated with the Reconfiguration Alternative and the WRM Alternative would be essentially the same as those anticipated from the Proposed Action. No disproportionate, adverse environmental justice effects would be anticipated from development of the Reconfiguration Alternative or the WRM Alternative.

ES1.7.18 Visual Resources

The proposed NOA and SOA contain areas designated as Visual Resource Management (VRM) classes III and IV. The objective of VRM Class III is to partially retain the existing character of the landscape while allowing moderate changes to the visual landscape. The objective of VRM Class IV is to provide for management activities that require major modification of the existing character of the landscape.

The expansion and development of the Proposed Action would increase the amount of visual contrast that currently exists between existing/authorized facilities and the natural character of the landscape. The primary change in visual effects from the currently approved levels would be the addition of the RDAs, HLFs, open pits, process areas, structures, and ancillary facilities, and the electrical transmission line within the TUC. The proposed NOA and SOA projects also would extend visual effects to the existing viewshed through the increased use of the area and proposed mining activity.

Prior to completion of reclamation, the existing mine features exhibit strong form and color contrast, especially under bright, clear light conditions. The facilities would have visual characteristics during active mining that would be similar to existing facilities, notably geometric forms and exposed earth surfaces. The Proposed Action would expand the visual effects in the vicinity of the existing mine areas and adjacent undeveloped areas, and would be most prominent during active mining. The visual contrast effects gradually would become less noticeable with reclamation.

Night sky/night lighting from the NOA and SOA operations (from processing areas, machinery, vehicles, light towers, conveyors, and roadway intersections) would cause impacts to the characteristic night landscape. There would be an increase in the existing sky glow conditions in view from all locations, including the nine KOPs at other locations along the Pony Express National Historic Trail, at the Fort Ruby site, and within the Ruby Lake NWR. Areas of night-time activity, such as star gazing, camping, hiking, dispersed recreation, and driving would receive higher noticeable changes to the characteristic night sky. Applicant-committed design features would reduce this impact through the use of anti-glare light fixtures.

Visitors to the Pony Express Trail, Fort Ruby National Historic Landmark, Ruby Lake Marsh National Natural Landmark, and Ruby Lake NWR would notice moderate to high contrasts to landform, vegetation, and color in the characteristic landscape. These contrasts would be lessened by the presence of existing mining operations and remnant landscapes from past mining.

Under the Proposed Action, the North Poker Flats HLF would reach the skyline in the views from KOP-2, KOP-8, and KOP-9. It is expected that the proposed facility would not achieve the requisite “moderate” level of landscape change in the short term during active mining for VRM Class III areas. Visual contrast from the facility would be reduced after reclamation; however, the long-term visual effects as viewed from KOP-2 and KOP-3 would not achieve VRM Class III objectives unless the planar form of the RDA is reshaped to repeat the angular ridgelines in the background.

Design features and applicant-committed environmental protection measures specific to visual impacts focus on facility design, phased construction, concurrent reclamation, and the use of anti-glare light fixtures. Successful reclamation standards would include the recontouring of all disturbed areas to blend with the natural topography, stabilization of erosion, and the establishment of an acceptable vegetative cover in accordance with Nevada Guidelines for Successful Revegetation.

Under the Reconfiguration Alternative and the WRM Alternative, impacts to viewers at KOP-2, KOP-8, and KOP-9 would be reduced substantially as compared to the Proposed Action due to the removal in the NOA of the Royale facilities, North Poker Flats HLF, Winrock HLF, Winrock Process Area, and associated ancillary facilities. In addition, impacts to viewers at KOP-3, KOP-5, KOP-6, and KOP-7 would be lessened as well. The mining activities from view from all KOPs would meet VRM Class objectives. The WRM Alternative also would reduce impacts for viewers at KOP-1, due to the reduction of the Redbird RDA and Pit. All other impacts to visual resources would be similar to the Proposed Action.

ES1.7.19 Hazardous Materials and Solid Waste

The transport, storage, use, and disposal of hazardous materials would occur during the construction and operation of the proposed project in accordance with federal, state, and local regulations. Based on the facilities design features and the operational practices in place, the probability of a major release occurring at the site or along transportation routes would be low. Barrick’s Spill Contingency Plan and the Emergency Response Plan would reduce the risk of impacts from a chemical or fuel release. Any release would be reported and mitigated according to federal and state law.

All hazardous waste generated at the mine would be accumulated and transported to licensed disposal facilities in accordance with applicable federal and state regulations. It is anticipated that the proposed project would not result in a change to the current classification of Small Quantity Generator of hazardous waste under the Resource Conservation and Recovery Act. Non-hazardous solid waste would be disposed of in the existing Class III-waivered landfills within the NOA and within a new landfill to be constructed within the Vantage and Yankee South RDA disturbance areas in the SOA.

The mine life is 10 years for the Reconfiguration Alternative and the WRM Alternative compared with 20 years for the Proposed Action. As a result, the amount of hazardous materials and waste generated for these alternatives would be approximately half of the Proposed Action over the life of the mine.

This page intentionally left blank